FACT SHEET FOR RENEWAL OF NPDES PERMIT
TOWN OF SOUTH PRAIRIE WASTEWATER TREATMENT PLANT
NPDES PERMIT NO. WA0040479

This fact sheet is a companion document to the draft National Pollutant Discharge Elimination System (NPDES) Permit No. WA0040479. The Department of Ecology (the Department) is proposing to issue this permit, which will allow discharge of treated municipal wastewater to waters of the State of Washington.

This fact sheet explains the nature of the proposed discharge, the Department's decisions on limiting the pollutants in the wastewater, and the regulatory and technical basis for those decisions. Public involvement information is contained in Appendix A. Definitions are included in Appendix B. Calculations are shown in Appendix C.

I. GENERAL INFORMATION

Applicant: Town of South Prairie
P.O. Box F
South Prairie, Washington 98385

Facility: South Prairie Wastewater Treatment Plant
121 NW Washington Street, South Prairie, WA
located just northwest of the town limits, north of State Highway Route 16 in Section 13, Township 19N, Range 5E of the Willamette Meridian, Pierce County, Washington.

Treatment: Municipal secondary treatment
Septic Tank Effluent/Recirculating Gravel Filter
Ultraviolet Disinfection

Discharge Location: South Prairie Creek at river mile 5.8
Latitude: 47° 08' 12" N
Longitude: 122° 06 '07" W

Water Body ID No.: WA-10-1050

II. TABLE OF CONTENTS

III. RECEIVING WATER INFORMATION

Characteristic Uses

South Prairie Creek is designated as a Class A, freshwater receiving water in the vicinity of the outfall. Characteristic uses include the following: water supply (domestic, industrial, agricultural); stock watering; fish migration, rearing and spawning; wildlife habitat; primary contact recreation; sport fishing; boating and aesthetic enjoyment; commerce and navigation.

Water Quality Criteria

Applicable criteria are defined in Chapter 173-201A WAC. Criteria for this discharge are summarized below:

Fecal Coliform Organisms	100 colonies/100 mL maximum geometric mean
Dissolved Oxygen	8 mg/L minimum
Temperature	18 degrees Celsius maximum
pH	6.5 to 8.5 standard units
Turbidity	less than 5 NTU above background
Toxics	No toxics in toxic amounts (see Appendix C for numeric criteria for toxics)

Puyallup River Basin TMDL

South Prairie Creek is part of the Puyallup River basin. The Puyallup River basin is undergoing rapid growth that promises increasing pollution pressure on the river and increasing requests for pollutant loadings. Beginning in 1990, the Department of Ecology conducted a TMDL (total maximum daily load) study for dissolved oxygen, ammonia and chlorine for the Puyallup River basin (White, Carbon, and Puyallup Rivers and tributaries). The report from the study was published in June 1993. The TMDL study indicates that ammonia and chlorine discharged by existing Permittees are likely to exceed water quality standards. Dissolved oxygen standards are also likely to be exceeded if significant new sources of biochemical oxygen demand (BOD) are introduced.

The study also indicates that water quality standards for ammonia, dissolved oxygen, and chlorine can be met for the existing discharges through implementation of effluent limits based on the maximum allowable mixing zone under WAC 173-201A-100.

Section 303(d) of the Clean Water Act requires states and the Environmental Protection Agency to establish total maximum daily loads (TMDLs) for those waters which cannot meet water quality standards after application of technology based controls. The TMDLs, effective May 1 through October 31, proposed for the Puyallup River basin are:

19,500 pounds per day of BOD5
3,300 pounds per day of ammonia (as nitrogen)

Wasteload allocations, effective May 1 through October 31, for the South Prairie facility are:

9.5 pounds per day of BOD5
8.0 pounds per day of ammonia (as nitrogen)

Additional information on the TMDL can be obtained in the Ecology TMDL document, June 1993.

Ambient Water Quality

The South Prairie outfall is located at river mile (RM) 5.8 on South Prairie Creek. The critical condition for South Prairie Creek is the seven day average low river flow with a recurrence interval of ten years (7Q10). Ambient data at critical conditions in the vicinity of the outfall was taken from the TMDL study which considered both historical data and an intensive monitoring study conducted in September-October 1990. The ambient background data used for this permit includes the following:

7Q10 low flow	29 cfs
Velocity	0.76 ft/sec
Depth	1 ft
Width	40 ft
Roughness (Manning)	0.04
Slope	4.96E-03
Temperature	15^{o} C
pH(high)	8.1
D. Oxygen	8.0 mg/L
Total Ammonia-N	.007 mg/L
Fecal Coliform	77/100mL dry weather (> 200 downstream after storm)
Turbidity	1 NTU
Hardness	37.2 mg/L as CaCO3
Zinc	3.4 ug/L (estimated dissolved value)
All Other Metals	0.0 (below detection level)

IV. FACILITY INFORMATION

General

The Town of South Prairie owns and operates this publicly owned wastewater treatment plant (POTW) which began operation in 1992. The POTW is classified as a Class 1 facility and is operated by a staff of one full-time employee certified at the Class 1 level.

The POTW serves a population of approximately 231 people as well as a 65-space RV park. There are no significant industrial sources.

Collection System

The collection system consists of a small diameter pipe, service laterals, and dosing tanks with either a septic tank effluent pump (STEP) or a septic tank effluent filter (STEF) station. The town currently has 66 STEP and 34 STEF installations. Of these, eight STEP units are considered commercial installations. There are no significant industrial users. The Permittee owns and maintains the conveyance system including all mainline piping and valves, service laterals from tanks to mainline, and the dosing tanks including pumps, filters and alarms. The plumbing between the building and the dosing tank is the responsibility of the property owner.

The Permittee has a local sewer ordinance, Ordinance No. 245, which provides for the operation and maintenance of the collection system and regulates use. The ordinance prohibits non-domestic discharges that would pass through the treatment works or interfere with operation or performance in accordance with 40 CFR 403.5B.

Treatment Processes

Flows from the collection system enter the facility through a 4-inch PVC line. The wastewater travels to a metering manhole where flows are measured with a Parshall flume and ultrasonic flow meter. Flows enter a recirculation tank and are pumped to a recirculating gravel filter. The effluent from the filter goes to a splitter manifold where 80 percent of the flow is returned to the recirculation tank and 20 percent goes to a 1000 gallon holding tank. Flows are circulated through the filter an average of five times. The holding tank effluent is then pumped to an ultraviolet disinfection unit. Effluent flows are also measured via Parshall flume and ultrasonic flow meter. The final effluent flows via gravity to a pump station. The pump station discharges the treated and disinfected effluent to a manhole at the bank of South Prairie Creek via a 3-inch diameter, 2200-foot long force main. From the manhole, it flows via gravity to a diffuser located in the middle of the creek. The diffuser provides initial dispersion of the effluent.

The treatment facility is one directional, with all units operating in series. There are no bypasses for temporary short-circuiting or emergencies. A portable generator supplies power for pump operation, control panels, and UV disinfection.

Residual Solids

The Permittee is responsible for inspecting and maintaining the septic tanks including septage removal. Solids also collect and must be removed from the recirculation tank, discharge holding tank, and UV disinfection chamber. South Prairie submitted a Solids Management Plan to the Department on September 27, 1993. Accumulated solids are pumped by septage hauler as authorized by the Permittee.

V. SUMMARY OF COMPLIANCE WITH THE PREVIOUS PERMIT

A permit for this facility was issued on February 28, 1992, for a five year period ending February 28, 1997. The existing permit will be replaced with the proposed permit which will be issued for a five year period. The major reason to reissue the permit at this time is to include the requirements necessary for implementation of the Puyallup River basin TMDL. Reissuance, in lieu of modification, places the Permittee on the same permit renewal schedule as other Permittees in the Puyallup River basin. This facilitates coordination among the dischargers regarding issues which effect the entire river basin.

The existing permit placed numeric effluent limitations on 5-day biochemical oxygen demand (BOD_5), Total Suspended Solid (TSS), pH, and fecal coliform. The limits are shown in Section VIII of this fact sheet.

The facility performed adequately during the one year design certification period. The biggest problem at that time was that the STEP tanks had no alarms during power outages. There were approximately 10 sewage spills during the one year period due to this problem. The collection system experienced some flow problems from the gravity flow septic tanks/filter units (STEF). To correct this problem, the operator increased the orifice size in accordance with procedures included in the operation and maintenance manual.

The facility received a Class 2 (sampling) inspection on October 5, 1993. At the time of the inspection, excessive solids had accumulated in the recirculation tank and the tank required pumping. The tank was subsequently pumped. The facility was not effectively removing suspended solids across the recirculating filter system and was exceeding the effluent limitations for Total Suspended Solids (TSS). The compliance problem began in August 1993 and has continued to the present time. The facility is also violating the lower effluent limitation for pH.

The Department issued Notice of Violation No. 94WQ-S259 on March 1, 1994. The Permittee responded via letter on May 5, 1994. The Permittee contacted the consulting engineer for the original project who declined assistance. The Permittee then requested technical assistance from the Department.

In response to the Permittee's request for technical assistance, a joint EPA/Ecology site visit was conducted in July 1994. Based on that site visit and additional research efforts, the most probable cause for failure is organic overloading of the recirculated gravel filter. Comments were submitted to the Permittee from EPA in August 1994 and from the Department in September 1994. The Permittee has retained an engineering consultant for corrective action.

The Permittee has been issued Compliance Order No. 94WQ-S259, First Amendment, which requires a total moratorium on connections to the facility even if building permits have already been issued. The moratorium remains in effect until (1) the facility returns to compliance with the effluent limitations in the NPDES permit, and (2) the facility has adequate capacity to accommodate the organic loadings received.

VI. WASTEWATER CHARACTERIZATION

An application for permit renewal was requested by and submitted to the Department on May 20, 1994. The application was accepted as sufficient on June 1, 1994.

The discharge as described in the NPDES application and Discharge Monitoring Reports (DMRs) submitted to the Department has been characterized for the following regulated parameters: flow, pH, temperature, fecal coliform bacteria, BOD (5-day), ammonia, nitrates and nitrites, total suspended solids, cadmium, copper, lead and zinc.

VII. PROPOSED PERMIT LIMITATIONS AND CONDITIONS

Federal and state regulations require that effluent limitations set forth in a NPDES permit must be either technology- or water quality-based. Technology-based limitations are set by regulation (40 CFR 133, and Chapters 173-220 and 173-221 WAC). Water quality-based limitations are based upon compliance with the Water Quality Standards (Chapter 173-201A). The more stringent of these two limits must be chosen for each of the parameters of concern. Each of these types of limits is described in more detail below.

DESIGN CRITERIA

In accordance with Washington Administrative Code (WAC) 173-220-130(1)(a), effluent limitations shall not be less stringent than those based upon the design efficiency for the facility, including removal efficiencies, which are contained in approved engineering plans, reports, or approved revisions. Also, in accordance with WAC 173-220-150(1)(g), flows or waste loadings shall not exceed approved design criteria.

The design criteria for this treatment facility are as follows:

Not all design criteria are located in permit.

Monthly average dry weather design flow:	28,680 gpd
Monthly average wet weather design flow:	38,200 gpd
BOD influent design loading (monthly average):	38 lb/day
TSS influent design loading (monthly average):	9.5 lbs/day
Design population equivalent	478
BOD/TSS design maximum effluent concentration:	30 mg/L
BOD/TSS design monthly average effluent concentration:	20 mg/L

TECHNOLOGY-BASED EFFLUENT LIMITATIONS

Municipal wastewater treatment plants are a category of discharger for which technology-based effluent limits have been promulgated by federal and state regulations. These effluent limitations are given in the Code of Federal Regulations (CFR) 40 CFR 133 (federal) and in Chapter 173-221 WAC (state). The following technology-based limits for secondary treatment are taken from WAC 173-221-040:

pH: shall be within the range of 6 to 9 standard units.

Fecal Coliform Bacteria:

Monthly Geometric Mean = 200 colonies/100ml
Weekly Geometric Mean = 400 colonies/100ml

BOD^5:

1. Monthly (30 day) average shall not exceed the more stringent of the following:

   a. 30 mg/L.
   b. Eighty five percent (85 percent) removal of the average influent concentration.

2. Weekly (7 day) average shall not exceed 45 mg/L.

3. Note that these effluent concentration limitations are less stringent than the design criteria for BOD. Therefore, in accordance with Chapter 173-220 WAC, the following design criteria limits are used in this permit:

   a. Monthly (30 day) average shall not exceed 20 mg/L.
   b. Weekly (7 day) average shall not exceed 30 mg/L.

4. Effluent mass loadings were calculated as follows:

   a. Monthly average limit = average design flow (0.038 mgd) x concentration limit (20 mg/L) x 8.34 (conversion factor) = 6.3 lbs/day.
   b. Weekly average limit = 1.5 x monthly average limit = 9.5 lb/day.

5. This type of treatment plant uses individual septic tanks for primary treatment. Some of the BOD load is removed at the septic tanks and some is removed at the recirculating gravel filter. The percentage removed across the septic tanks is approximately 30 percent but remains variable. It is, therefore, not possible to directly measure 85 percent removal efficiency across the entire treatment plant. However, as long as effluent concentration limits are met and there is no excessive infiltration and inflow, compliance with the 85 percent removal requirement can be assumed.

TSS:

1. Monthly (30 day) average shall not exceed the more stringent of the following:

   a. 30 mg/L.
   b. Eighty five percent (85 percent) removal of the average influent concentration.

2. Weekly (7 day) average shall not exceed 45 mg/L.

3. Note that these effluent concentration limitations are less stringent than the design criteria for TSS. The more stringent design criteria are also considered necessary for effective ultraviolet disinfection. Therefore, in accordance with Chapter 173-220 WAC, the following design criteria limits are used in this permit:

   a. Monthly (30 day) average shall not exceed 20 mg/L.
   b. Weekly (7 day) average shall not exceed 30 mg/L.

4. Effluent mass loadings were calculated as follows:

   a. Monthly average limit = average design flow (0.038 mgd) x concentration limit (20 mg/L) x 8.34 (conversion factor) = 6.3 lbs/day.
   b. Weekly average limit = 1.5 x monthly average limit = 9.5 lb/day.

5. This type of treatment plant uses individual septic tanks for primary treatment. Some of the TSS load is removed at the septic tanks and some is removed at the recirculating gravel filter. The percentage removed across the septic tanks is approximately 70 percent but remains variable. It is, therefore, not possible to directly measure 85 percent removal efficiency across the treatment plant. However, as long as effluent concentration limits are met and there is no excessive infiltration and inflow, compliance with the 85 percent removal requirement can be assumed.

WATER QUALITY-BASED EFFLUENT LIMITATIONS

In order to protect existing water quality and preserve the designated beneficial uses of Washington's surface waters, WAC 173-201A-060 states that waste discharge permits shall be conditioned such that the discharge will meet established Water Quality Standards. The Washington State Water Quality Standards (Chapter 173-201A WAC) is a state regulation designed to protect the beneficial uses of the waters of the state.

For discussion of the classification and status of the receiving water, see Section III of this fact sheet. Several elements of the State's Water Quality Standards applicable to all facilities are discussed in Figure 1 below:

Numerical Criteria

"Numerical" water quality criteria are numerical values set forth in the State of Washington's Water Quality Standards (Chapter 173-201A WAC), which specify the allowable levels of pollutants in a receiving water. Numerical criteria for dissolved oxygen and turbidity are among the criteria contained in WAC 173-201A-030. Numerical criteria are also listed for many toxic substances including chlorine and ammonia (WAC 173-201A-040).

Numeric criteria set forth in the Water Quality Standards are used to derive the effluent limits in a discharge permit. When water quality-based limits are more stringent or potentially more stringent than technology-based limitations, they must be used in a permit.

Narrative Criteria

In addition to numerical criteria, "narrative" water quality criteria (WAC 173-201A-030) are used to limit acute and chronic toxicity, radioactivity, and other deleterious materials, and prohibit the impairment of the aesthetic value of the waters of the state. Narrative criteria describe the specific beneficial uses of all fresh (WAC 173-201A-130) and marine (WAC 173-201A-140) waters in the State of Washington.

Antidegradation Policy

The State of Washington's Antidegradation Policy requires that discharges into a receiving water shall not further degrade the existing water quality of the water body. In cases where the natural conditions of a receiving water are of lower quality than the criteria assigned, the natural conditions shall constitute the water quality criteria. Similarly, when the natural conditions of a receiving water are of higher quality than the criteria assigned, the natural conditions shall constitute the water quality criteria. More information on the State Antidegradation Policy can be obtained by referring to WAC 173-201A-070.

Mixing Zones

The Water Quality Standards allow the Department of Ecology to authorize mixing zones around a point of discharge in establishing water quality-based effluent limits. Both "acute" and "chronic" mixing zones may be authorized for pollutants that can have a toxic effect on the aquatic environment at the point of discharge. The concentration of pollutants at the edge of these mixing zones may not exceed the numerical criteria for that type of zone. Mixing zones can only be authorized for discharges that are receiving all known, available, and reasonable methods of prevention and control (AKART).

Figure 1.
Major elements of the State of Washington Water Quality Standards

Mixing Zone Authorization

Because of the reasonable potential for pollutants in the proposed discharge to exceed water quality criteria at the point of discharge, a mixing zone has been authorized in this permit in accordance with Chapter 173-201A WAC.

The mixing zone must meet the most stringent combination of the following:

1. Maximum allowable length = 300 feet downstream
   100 feet upstream.
2. Maximum allowable width = 10 feet
   (25 percent of the river width).

3. Chronic allowable dilution factor (DF) = 190
   (based on 25 percent of 7Q10 critical flow, see Appendix C for calculations)

Acute

Acute toxicity criteria are to be met as near to the point of discharge as possible. A zone where acute criteria may be exceeded must meet the most stringent combination of the following:

1. Maximum allowable length = 30 feet downstream, 10 feet upstream
2. Maximum allowable width = 10 feet
   (25 percent of the river width).
3. Acute allowable dilution factor = 15.6
   (based on 2.5 percent of the 7Q10 critical flow, see Appendix C for calculations).

Water Quality-Based Limits for Numeric Criteria

Pollutants in an effluent may affect the aquatic environment near the point of discharge (near field) or at a considerable distance from the point of discharge (far field). Toxic pollutants, for example, are near-field pollutants--their adverse effects diminish rapidly with mixing in the receiving water. Conversely, a pollutant such as BOD is a far-field pollutant whose adverse effect occurs away from the discharge even after dilution has occurred. Thus, the method of calculating water quality-based effluent limits varies with the point at which the pollutant has its maximum effect.

The derivation of water quality-based limits also takes into account the variability of the pollutant concentrations in both the effluent and the receiving water. Water quality-based limits are derived for the waterbody's critical condition, which represents the receiving water and waste discharge condition with the highest potential for adverse impact on the aquatic biota and existing or characteristic water body uses.

Near-field Pollutants

Turbidity, fecal coliform, and temperature criteria are met at the point of discharge. The pH is met within the authorized mixing zone provided that the technology-based limits of 6-9 standard units are not exceeded.

Toxics

The following toxics were determined to be present in the discharge: ammonia, cadmium, copper and zinc. A reasonable potential analysis (See Appendix C) was conducted on these parameters to determine whether or not effluent limitations would be required in this permit. Based on the analysis, no reasonable potential was shown for any of the parameters to violate water quality standards outside of an authorized mixing zone. No effluent concentration limitations are required in this permit.

Far-Field Pollutants

Daily maximum mass limitations (8.0 pounds/day) for ammonia and weekly maximum mass limitations (9.5 lb/day) for biochemical oxygen demand are based on technology and the recommendations in the Puyallup River TMDL. These limits are expected to be protective of dissolved oxygen criteria in all segments of the Puyallup River basin. The ammonia limits are effective from May 1 through October 31 of each year.

Whole Effluent Toxicity

In addition to the requirement not to exceed specific chemical parameters, the Water Quality Standards require that the effluent not cause toxic effects in the receiving waters.

The effluent has already been evaluated for those toxics (ammonia and metals) which might be expected in domestic effluent. There are no industrial users. Since unknown sources of toxicity are not expected in the effluent of this small municipal discharger, whole effluent toxicity testing in not required.

Human Health

The conditions in this permit seek to protect aquatic life from toxic effects. Criteria for protecting aquatic life is usually a more stringent requirement which will also protect the health of humans. If Ecology finds that this permit does not protect human health, the permit will be modified to incorporate new conditions as needed.

Sediment Quality

The Department has promulgated aquatic sediment standards (Chapter 173-204 WAC) to protect aquatic biota and human health. These standards state that the Department may require Permittees to evaluate the potential for the discharge to cause a violation of applicable standards (WAC 173-204-400).

The Department has determined through a review of the discharger characteristics and effluent characteristics that this discharge has no reasonable potential to violate the Sediment Management Standards.

VIII. COMPARISON OF EFFLUENT LIMITS WITH THE PREVIOUS PERMIT

	EXISTING PERMIT		PROPOSED PERMIT	
PARAMETER	**Monthly Avg.**	**Weekly Avg.**	**Monthly Avg.**	**Weekly Avg.**
BOD	20 mg/L 6.3 lb/day 85% removal	30 mg/L 9.5 lb/day	20 mg/L 6.3 lb/day 85% removal	30 mg/L 9.5 lb/day
TSS	20 mg/L 6.3 lb/day	30 mg/L 9.5 lb/day	20 mg/L 6.3 lb/day	30 mg/L 9.5 lb/day
Fecal Coliform	200/100mL	400/100mL	200/100mL	400/100mL
pH	6.0 to 9.0 standard units		6.0 to 9.0 standard units	
	Monthly Avg.	**Daily Max.**	**Monthly Avg.**	**Daily Max.**
Ammonia (May 1 -Oct. 31)				8.0 lb/day

IX. MONITORING AND REPORTING

Effluent monitoring, recording, and reporting are required (WAC 173-220-210) to verify that the treatment process is functioning correctly and the effluent limitations are being achieved.

Monitoring of sludge quantity and quality is necessary to determine whether or not a discharger will be considered a sludge generator and to determine the appropriate uses of the sludge. Sludge monitoring is required in accordance with 40 CFR 122.44(a)(2).

The monitoring and testing schedule is detailed in the permit under Condition S.2. Specified monitoring frequencies take into account the quantity and variability of discharge, the treatment method, past compliance, significance of pollutants, and cost of monitoring. The required monitoring frequency is consistent with agency guidance given in the current version of the Department Permit Writer's Manual. This frequency of monitoring is considered to be the minimum frequency to document compliance.

X. BASIS FOR OTHER PERMIT CONDITIONS

Operator Certification

The Department has classified the existing facility as a Class 1 Municipal Wastewater Treatment Plant. Chapter 70.95B RCW requires that every operator in responsible charge of operation and maintenance of a wastewater treatment plant be certified at a level equal to or higher than the classification or rating of the treatment plant being operated. In addition, the operator in charge of each shift shall be certified at a level no lower than one class below the plant classification.

Accredited Laboratory

The South Prairie Wastewater Treatment plant is classified by EPA as a minor discharge. WAC 173-220-210(4)(a) requires that all monitoring data submitted to Ecology must be prepared by a laboratory accredited under the provisions of Chapter 173-50 WAC by July 1, 1994.

Prevention of Facility Overloading

Overloading of the treatment plant may result in a violation of the terms and conditions of the permit. To prevent this from occurring, Chapter 90.48.110 RCW and WAC 173-220-150 require the Permittee to take the actions detailed in permit requirement S.4. to plan expansions or modifications before existing capacity is reached, and to report and correct conditions that could result in new or increased discharges of pollutants. Condition S.4. restricts the amount of flow.

Operation and Maintenance (O & M)

The proposed permit contains condition S.5. as authorized under RCW 90.48.110, WAC 173-220-150, Chapter 173-230 WAC, and WAC 173-240-080. It is included to ensure proper operation and regular maintenance of equipment, and to ensure that adequate safeguards are taken so that constructed facilities are used to their optimum potential in terms of pollutant capture and treatment.

Residual Solids Handling

To prevent water quality problems occurring from the improper storage, handling, or disposal of solid wastes, the Permittee is required in permit condition S.7. to handle and dispose of all residual solids in accordance with the requirements of RCW 90.48.080 and the jurisdictional health department, the Department-required management plan (WAC 173-240-060(3)(m)), State Water Quality Standards, and applicable federal laws.

On March 22, 1993, new federal regulations, 40 CFR Part 503, became effective governing land application, land disposal, and incineration of domestic sewage sludges including septage. These regulations promote beneficial use and ensure that public health and the environment are protected from potentially adverse effects of pollutants found in domestic sewage sludge. Specific requirements are detailed in the regulation.

The new requirements are designed to be self-implementing. That is, any facility producing, treating, or disposing of domestic sewage sludge must comply with the limitations and provisions of the regulation whether or not a permit has been issued.

The compliance deadline for meeting 40 CFR Part 503 requirements other than monitoring, record keeping, and reporting is February 19, 1994, unless construction is required. When construction is necessary, the deadline is extended until February 19, 1995.

Requirements for monitoring and record keeping became effective on July 20, 1993. Reporting requirements became effective on February 19, 1994.

Permit application information on sludge is due from facilities with NPDES permits at the time of permit renewal. The sludge program has not yet been formally delegated to the Department from the United States Environmental Protection Agency (EPA). In the interim, EPA Region 10 has instructed Permittees that submission of information to the Department meets the application requirement.

Requirements for monitoring and record keeping are included in this permit.

Pretreatment

Permit condition S.8. prohibits non-domestic discharges that would pass through the treatment works or interfere with operation or performance in accordance with 40 CFR 403.5B. Significant commercial and industrial operations are not allowed to discharge wastes to the Permittee's sewage system without prior authorization from the Department.

XI. GENERAL CONDITIONS

General Conditions are based directly on state and federal law and regulations, and have been standardized for all NPDES permits issued by the Department.

XII. PERMIT MODIFICATIONS

The Department may modify this permit to impose numerical limitations, if necessary to meet Water Quality Standards, Sediment Quality Standards, or Ground Water Standards, based on new information obtained from sources such as inspections, effluent monitoring, outfall studies, and effluent mixing studies.

The Department may also modify this permit as a result of new or amended state or federal regulations.

XIII. RECOMMENDATION FOR PERMIT ISSUANCE

This permit meets all statutory requirements for authorizing a wastewater discharge, including those limitations and conditions believed necessary to protect human health, aquatic life, and the beneficial uses of waters of the State of Washington. The Department proposes that this permit be issued for five years.

APPENDIX A--PUBLIC INVOLVEMENT INFORMATION

The Department has tentatively determined to reissue a permit to the applicant listed above. The permit contains conditions and effluent limitations which are described in the rest of this fact sheet.

Public notice of application was published on September 5, 1999, and September 12, 1999, in the Tacoma News-Tribune to inform the public that an application had been submitted and to invite comment on the reissuance of this permit.

The Department published a Public Notice of Draft in the Tacoma-News Tribune on February 24, 2000, to inform the public that a draft permit and fact sheet were available for review. Interested persons were invited to submit written comments regarding the draft permit. The draft permit, fact sheet, and related documents were available for inspection and copying between the hours of 8:00 a.m. and 5:00 p.m. weekdays, by appointment, at the regional office listed below. Written comments should be mailed to:

Water Quality Permit Coordinator
Department of Ecology
Southwest Regional Office
P.O. Box 47775
Olympia, Washington 98504-7775

Any interested party may comment on the draft permit or request a public hearing on this draft permit within the thirty (30) day comment period to the address above. The request for a hearing shall indicate the interest of the party and the reasons why the hearing is warranted. The Department will hold a hearing if it determines there is a significant public interest in the draft permit (WAC 173-220-090). Public notice regarding any hearing will be circulated at least thirty (30) days in advance of the hearing. People expressing an interest in this permit will be mailed an individual notice of hearing (WAC 173-220-100).

The Department will consider all comments received within thirty (30) days from the date of public notice of draft indicated above, in formulating a final determination to issue, revise, or deny the permit. The Department's response to all significant comments is available upon request and will be mailed directly to people expressing an interest in this permit.

Further information may be obtained from the Department by telephone, (360) 407-6279, or by writing to the address listed above.

APPENDIX B--DEFINITIONS

Acute Toxicity--The lethal effect of a compound on an organism that occurs in a short period of time, usually 48 to 96 hours.

Ambient Water Quality--The existing environmental condition of the water in a receiving water body.

Ammonia--Ammonia is produced by the breakdown of nitrogenous materials in wastewater. Ammonia is toxic to aquatic organisms, exerts an oxygen demand, and contributes to eutrophication. It also increases the amount of chlorine needed to disinfect wastewater.

BOD_5--Determining the Biochemical Oxygen Demand of an effluent is an indirect way of measuring the quantity of organic material present in an effluent that is utilized by bacteria. The BOD_5 is used in modeling to measure the reduction of dissolved oxygen in a receiving water after effluent is discharged. Stress caused by reduced dissolved oxygen levels makes organisms less competitive and less able to sustain their species in the aquatic environment. Although BOD is not a specific compound, it is defined as a conventional pollutant under the federal Clean Water Act.

Chlorine--Chlorine is used to disinfect wastewaters of pathogens harmful to human health. It is also extremely toxic to aquatic life.

Chronic Toxicity--The effect of a compound on an organism over a relatively long time, often 1/10 of an organism's lifespan or more. Chronic toxicity can measure survival, reproduction or growth rates, or other parameters to measure the toxic effects of a compound or combination of compounds.

Class 1 Inspection--A walk-through inspection of a facility that includes a visual inspection and some examination of facility records. It may also include a review of the facility's record of environmental compliance.

Class 2 Inspection--A walk-through inspection of a facility that includes the elements of a Class 1 Inspection plus sampling and testing of wastewaters. It may also include a review of the facility's record of environmental compliance.

Critical Condition--The time during which the combination of receiving water and waste discharge conditions have the highest potential for causing toxicity in the receiving water environment. This situation usually occurs when the flow within a water body is low, thus, its ability to dilute effluent is reduced.

Fecal Coliform Bacteria--Fecal coliform bacteria are used as indicators of pathogenic bacteria in the effluent that are harmful to humans. Pathogenic bacteria in wastewater discharges are controlled by disinfecting the wastewater. The presence of high numbers of fecal coliform bacteria in a water body can indicate the recent release of untreated wastewater and/or the presence of animal feces.

Mixing Zone--An area that surrounds an effluent discharge within which water quality criteria may be exceeded. The area of the authorized mixing zone is specified in a facility's permit and follows procedures outlined in state regulations (Chapter 173-201A WAC).

National Pollutant Discharge Elimination System (NPDES)--The NPDES (Section 402 of the Clean Water Act) is the Federal wastewater permitting system for discharges to navigable waters of the United States. Many states, including the State of Washington, have been delegated the authority to issue these

permits. NPDES permits issued by Washington State permit writers are joint NPDES/State permits issued under both State and Federal laws.

pH--The pH of a liquid measures its acidity or alkalinity. A pH of 7 is defined as neutral, and large variations above or below this value are considered harmful to most aquatic life.

Technology-based Effluent Limit--A permit limit that is based on the ability of a treatment method to reduce the pollutant.

Total Suspended Solids (TSS)--Total suspended solids is the particulate material in an effluent. Large quantities of TSS discharged to a receiving water may result in solids accumulation. Apart from any toxic effects attributable to substances leached out by water, suspended solids may kill fish, shellfish, and other aquatic organisms by causing abrasive injuries and by clogging the gills and respiratory passages of various aquatic fauna. Indirectly, suspended solids can screen out light and can promote and maintain the development of noxious conditions through oxygen depletion.

Water Quality-based Effluent Limit--A limit on the concentration of an effluent parameter that is intended to prevent the concentration of that parameter from exceeding its water quality criterion after it is discharged into a receiving water.

APPENDIX C--TECHNICAL CALCULATIONS

FLOW AND DILUTION FACTOR CALCULATIONS :

Discharge monitoring report data for flow is presented on an Excel spreadsheet in this section. The following flow data is used in calculating dilution factors and effluent limits in the draft permit:

1. Design flows are used for the TMDL waste load allocations (WLA) for ammonia and BOD.

2. Projected flows to the year 2000 as stated in the facilities plan are used for the monthly average calculations in the 5 year permit.

3. Ninetieth percentile values of historical peaking factors (monthly average to daily maximum flow) were used to project maximum daily flows to the year 2000.

4. The acute dilution factor used in this permit (15.6) was calculated using the "dry weather" daily maximum projected flow (38,200 gpd = 0.06 cfs)

   Calculation: (Effluent flow + 0.025 ambient flow)/ Effluent flow = acute dilution factor
   (0.06 cfs + 0.025 * 29 cfs)/ 0.06 cfs = 13.3

5. The chronic dilution factor used in this permit (190) was calculated using the "dry weather" projected average monthly flow (28,680 gpd = 0.044 cfs).

   Calculation: (Effluent flow + 0.25 ambient flow)/ Effluent flow = chronic dilution factor
   (0.044 cfs + 0.25 * 29 cfs)/ 0.044 cfs = 164.8

DETERMINATION OF REASONABLE POTENTIAL

Reasonable potential was calculated using the method in EPA. The following variables were used for each pollutant to determine the reasonable potential for violations:

Coefficient of Variation (CV)

This is a measure of variability of a pollutant in the effluent and is calculated as the standard deviation divided by the mean. When less than ten data points are available a value of 0.6 is used (EPA 1991). This value is representative of the variability of the conventional pollutants from municipal treatment plants and therefore is used to estimate the variability of other pollutants.

Number of Samples(n)

The number of samples of the pollutant measured in the effluent from which the determination is being made.

Effluent Maximum Concentration

The highest value of the data points used.

Multiplier

A value calculated as shown in EPA,1991 to estimate the expected maximum concentration of the pollutant (95th percentile) in the effluent at a 99 percent confidence level by multiplying the value by the effluent maximum concentration.

Acute and Chronic Dilution Factors

The dilution factors calculated for this discharge at the boundaries of the authorized mixing zone.

Ambient Concentration

Background concentration of the pollutant in the receiving water.

Water Quality Criterion

The value for the pollutant as determined from Chapter 173-201A WAC.

The maximum expected concentration is added to the ambient concentration of the pollutant in the receiving water. This sum is then divided by the dilution factor to determine the concentration of the pollutant at the edge of the mixing zone. If the resultant concentration at the edge of the mixing zone exceeds the water quality criterion, an effluent limit is imposed. For all parameters measured in this permit, the resultant concentration at the edge of the mixing zone was below the water quality criteria and no effluent limits were imposed.

REFERENCES FOR TEXT AND APPENDICES

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